COMP 1501 – Tutorial 06
Design Document Template

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Introduction [1-2 paragraphs]
Provide a quick 'abstract' of the game. This includes a brief explanation of how the game will function, as well as what the goal of the game is. Think of this as providing a very top-level narrative of a player experiencing this game for the first time.

Enemies will enter the screen and follow a winding path around the screen, trying to make it to the exit. The player will spend gold to build towers that damage these enemies. The goal is to build an ultimate tower, which costs a lot of money. Players get some gold at the start, and can get more by killing enemies and by building towers that generate gold. As the game progresses, the enemies that appear will become stronger, and will drop more gold. The player will be able to upgrade their towers to make them more powerful by spending more gold.

Genre / Target Audience [1-2 sentences]
What genre is your game and who is it being designed for? For example, is this more focused on strategy or performance?

The genre of the game will be tower defense, focused more around strategy. As most tower defense games, the majority rely on the player being able to strategize where to place towers to protect themselves from the enemies who are slowly approaching. The target audience would be anyone who enjoys to play any type of game, but can be preferred by people who enjoy tower defense games and can also strategize quite well.

Story / Background [1-2 paragraphs]
What is the backstory for the characters in the game? What has happened in this hypothetical world and how/why has it led to the point your game world is currently in when the player(s) are playing it?

The land was once ruled by an almighty king. He ruled the land and fended off all danger that came its way, keeping the civilians, the land, and most importantly, his kingdom safe. When the king got sick, he was deemed unable to serve as king and so, his son was brought to power. Everyone was so relieved that the prince had been appointed and was able to take on the role of king to keep the land safe, although they did not expect what the prince was thinking all along.

The prince had turned evil and taken over the land, letting the evil that once attempted to destroy the land enter the kingdom and the castle that the king once swore to protect. This was many years ago and the village outside of the castle had enough. They decided to take action and storm the castle to retake their freedom from the evil prince.

Characters / Factions [1 paragraph per character]

Introduce your main characters / factions. Describe them in high level only (nothing about specific gameplay mechanics here). How do your characters fit into the background/story you've devised?

Prince & the Tyranny
- The Prince is the current ruler of the land. After his father became sick and died, he took over and began to rule the land. He had no plans to be like his father and protect the land he rules, instead he allowed all the danger to enter and rule alongside him.

Village Folk
- The village folk are the people who live in the land, being ruled by the Prince and his evil tyranny. They have dealt with his ruling for many years after the death of the King and they have decided they had enough and wanted to take back the land and restore it back to its glory from before the Prince had been sworn in to rule.

Level / Environment Design [1 paragraph]

In a very top-level fashion, describe how your game will approach its level design. What kind of environment will you be in? How will the levels be set up?

On the left side of each level, the castle is located. On the right side, offscreen, the village is located. The enemies each level will come from the right side of the map, following the very windy path to the castle, while having to try and get through the numerous weaponized towers attacking them placed by the player. These towers can either attack the enemies or generate more gold to place more towers. Towers will require gold to be built and to be upgraded, gold which can be obtained from killing enemies or from generator towers.

Gameplay & Key Features [1-3 sentences per feature/mechanic]

Describe briefly all the signature and novel mechanics/features that your game will offer. This includes ones that are specific to a certain character and those that are either generic or a part of the level itself.

Basic features:
- Gold
  - Start with a set amount
  - Can gain more by killing enemies, and through generating gold with buildings
  - Used for building and upgrading towers
- Path
  - Very windy, with many strategic points for certain types of towers
  - Most enemies follow the path
- Enemies
  - Move along the path to try and breach the castle gate
  - When killed, the player receives gold depending on enemy type
- Towers
  - Are stationary
  - Can be removed
  - Either attack or generate income
  - Can be upgraded
- Castle gate
  - Can withstand a certain amount of damage before being destroyed
  - Can deal some damage, but has a very low dps
- Rounds
  - Towers can be placed mid-round, as well as in between rounds
  - Enemies will not spawn in between rounds
  - Income from production buildings will be given at the end of each round
  - Cannot generate income (besides selling towers) between rounds

Special features:
- Castle walls
  - Can place some towers on the castle walls
  - Towers placed here have increased range
- Ultimate tower
  - Building this wins the game automatically
  - Requires a very large amount of gold
- Enemy cannons
  - Can deal damage to the gate from a longer range (not super far though)
- Corruption
  - Increases by 1 each round
  - Pay a small fee to reduce corruption between rounds
  - Higher corruption = more chance of Thieves appearing
- Enemy Thieves
  - If they reach the gate, they do not damage it, instead they steal some gold and disappear
  - More likely to appear if corruption is higher
  - Can replace some regular enemies, a possible benefit of high corruption
- Loans

- ○ Can be taken at any time
- ○ Must be repaid within 10 rounds, with 15% interest (100 gold loan needs 115 to pay back) at the start
- ○ If not repaid in time, will be extended another 10 rounds, and will increase corruption by 5%
- ○ If total interest% of outstanding loans exceeds 100%, then more loans cannot be taken until some have been paid off. (ex. 20 loans maximum at 5% interest)
- Tax office (building)
    - ○ Increases income from production buildings by 5% per level
    - ○ While you have a tax office, paying off loans will slightly lower interest on future loans
- Bankruptcy
    - ○ Removes all loans
    - ○ Increases loan interest rate by 10%
    - ○ Tower damage will be halved for 5 rounds
    - ○ All income will be halved for 5 rounds
    - ○ All mercenaries are lost
- Mercenary tent (building)
    - ○ Allows the player to hire mercenary units for gold
    - ○ These move in the opposite direction along the path, dealing damage to and taking damage from enemy units
    - ○ Are lost when they make it to the end of the path, or when they die

Technical Roadmap

Scene Name: Playing

Scene Description: Tower defense, player's castle on the left, defending from the enemies approaching from the right side. Players can use gold to place/upgrade towers anywhere on the map (except on paths) to kill the enemies and protect their castle. Placing/upgrading towers will use gold.

Entry Condition: Game start button pressed

Exit Condition: Castle gate health reaches 0.

What happens in initialize: - Initialize Fonts - Background image (Map, pathing, castle) - Create data dictionary and add necessary data   - Towers, Enemies, Rounds, Game State, Healths, Information, Counters - Reset all healths to full - Reset all counters to 0 - Castle Health Bar Image created

What user input needs to be looked for and what should each do:
- Escape key: exit the game
- Number keys: select towers
- Mouse left clicks: place selected tower at location of cursor, if possible
  - upgrade tower at location of cursor, if tower is present
- Mouse right clicks: Sell tower for small refund
- Mouse hover: display level of tower at location of cursor, as well as upgrade cost and sell value
- L key: take a loan
- P key: pay off oldest loan
- C key: reduce corruption
- B key: file for bankruptcy

What data is updated each frame, and how should it update:
- If the user quits, exit the game.
- If the player hovers over a tower/building, display the information about it above it using a rect that can is see through
- When the player presses a number key, select the tower that has that number by adding a slight color to the correct rect
- When a player left clicks, draw a sprite at that location (if it's not already taken/a pathway) to indicate a tower/building
- When a player right clicks, remove the sprite at the location if there is a tower/building and add some gold to the gold counter for repayment.
- When the enemies (not thieves) make it to the castle, damage the door and the enemy so they can't do infinite damage
- When the thieves make it to the castle, remove a random amount of gold from the player's counter.
- When the enemy health reaches 0, remove the enemy from being updated
- When the castle health reaches 0, end the game and show the game over screen.
- When an enemy comes in proximity of a tower, fire a bullet at the enemy and damage them.
- When the player presses L, ask the player how much they wish to loan, then add that amount if integer to their gold count and add that to the game data dictionary under loans.
- When the player presses P, if they have enough gold to pay off the loan, take the first item in the dictionary and remove it and remove that amount of gold from their counter and remove the interest on that loan.
- When the player presses C, if they have enough gold to pay the fee, reduce the corruption counter by 1.
- When a round ends, increase corruption by 1, if the player has to pay back a loan, remove that amount of gold from their counter if they have enough, if they don't, tell the player that they have another 5 rounds to pay off the loan and that corruption has increased 5%.
- When a round begins, a random amount of sprites will be added to the enemy data and will be rendered in and their location will update every second as they take the path to the castle. Same goes for thieves, but their random chance is based on corruption level.
- If the player requests a loan and their interest is at 100%, tell the player they can't take anymore loans until some are paid off.
- When a player presses B, remove all loans, add 10 to base interest rate, half the tower damage and income rate for 5 rounds.

What needs to be drawn to the screen:
- Background Image (Including map, pathing, castle)
- Enemies (When they are released at the beginning of the round; on the right)
- Towers (Along with the hover-screen displaying info when needed) (Including buildings)
- Bullets (When fired from towers)
- Gold #
- Round #
- Corruption #
- Castle Health